

# PATENT COOPERATION TREATY

REC'D 25 JUL 2005

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From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/B2005/050312

International filing date (day/month/year)  
26.01.2005

Priority date (day/month/year)  
29.01.2004

International Patent Classification (IPC) or both national classification and IPC  
H04S3/00, H04S7/00, G01S5/18

Applicant  
KONINKLIJKE PHILIPS ELECTRONICS N.V.

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050312

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. II Priority**

---

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050312

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 10-13

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 10-13
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☒ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050312

**Box No. IV Lack of unity of invention**

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-9,14-19

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-9,14-19
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9,14-19
Industrial applicability (IA)	Yes: Claims	1-9,14-19
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item IV**

**Lack of unity of invention**

- 1 The following documents are referred to in this communication:  
D1: GB-A-2 203 315 (ELIAHU IGAL ZEEVI) 12 October 1988 (1988-10-12)  
D2: GB-A-2 186 367 (ELIAHU IGAL ZEEVI) 12 August 1987 (1987-08-12)  
D3: DE 40 27 338 A1 (DRESCHER, RUEDIGER, 7823 BONNDORF, DE;  
DRESCHER, RUEDIGER, 79848 BONND) 12 March 1992 (1992-03-12)  
D4: US-A-5 719 944 (BANERJEA ET AL) 17 February 1998 (1998-02-17)  
D5: WO 02/08782 A (ROBERT BOSCH GMBH; HOETZEL, JUERGEN) 31 January  
2002 (2002-01-31)
2. This Authority considers that there are 3 inventions covered by the claims indicated as follows:

I: Claims 1-9 and 14-19

Claim 1 specifies an audio-video system having an audio reproduction device for reproduction of audio signals via at least one loudspeaker unit, and having ultrasonic signal generating means for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units, which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means for receiving ultrasonic signals, and having ultrasonic signal-processing means for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person from changes in the received ultrasonic signals and to emit a detection signal.

Claim 2 further specifies the audio/video system of claim 1 in that the ultrasonic signal-processing means are designed to detect at predetermined intervals echo pattern and to compare the last detected echo pattern with at least one echo pattern detected earlier in order to detect the presence of at least one person from changes in the echo pattern.

Claims 5-7,8,9,14-18 and 19 address other aspects of the audio-video system whereby the partial international search report already encompasses the subject-matter of these claims.

**II: Claims 10 and 11**

Dependent claim 10 further specifies the audio/video system of claim 1 in that the audio/video system is designed to prepare a user profile by recording user actions.

**III: Claims 12 and 13**

Dependent claim 12 further specifies the audio/video system of claim 1 in that the detection signals are designed to activate an alarm device.

- 3.a The 3 separate groups of invention are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:  
The closest prior art has been identified as: D1 = GB 2 203 315 (mentioned in the description on page 1).

The common features linking together the inventions 1-3 are the features of independent claim 1.

This subject-matter of claim 1 is already known (cf. documents GB2203315 (**D1**), GB2186367 (**D2**) and DE4027338 (**D3**)).

In detail, document **D1** discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "110" and "200"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals; cf. also the ultrasonic transmitters associated with units "400" and "500" in figure 1 and page 6, penultimate paragraph, and figure 2) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1), which at



least one of the loudspeaker units (cf. page 5, third paragraph and figure 1) is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (blocks "701" and "702" in figure 2) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. figures 4a, 4c and item "250" in figure 1; page 5, penultimate and last paragraph and page 7, second paragraph) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically (cf. page 20, last paragraph) to detect the presence of at least one person (cf. item "600" in figure 1) from changes in the received ultrasonic signals (cf. page 20, last paragraph whereby echos are identified from locations where no echos were previously detected; cf. also page 8, line 33 - page 9, line 4 and page 9, lines 11-14) and to emit a detection signal (cf. signal "data out" from item "810" in figure 2, figure 3 and page 7, last paragraph).

Document **D2** states an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "1" and "2" in figure 1), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "4" and "5" in figure 1), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (receiver "11" in figure 3) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "15" in figure 3 and page 1, lines 102-105 and page 2, lines 3-6) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. page 1, left-hand column, lines 5-13 and page 2, lines 90-95 and lines 102-108) from changes in the received ultrasonic signals (cf. page 2, lines 36-46) and to emit a detection signal (cf. output-signal "15" in figure 3 and page 3, line 112-114).

Document **D3** discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "4"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals,

wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "3" and column 1, lines 31-34), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (cf. item "3") for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "10") for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. items "1" and "2") from changes in the received ultrasonic signals (cf. column 1, lines 51-58) and to emit a detection signal (cf. output-signal of item "10" in order to adapt the balance and column 1, lines 56-60).

- 3.b The 3 groups of inventions mentioned before relate to different aspects of an audio/video system and address different problems, namely:

Claims 1-9 and 14-19:

This invention is based on the problem how to detect the presence of at least one person/listener.

Claims 10 and 11:

This invention is based on the problem how to take the listening profile/preferences of a particular listener/user into account.

Claim 12 and 13:

This invention is based on the problem how to implement safety measures in an audio/video system.

- 3.c Thus, the above 3 groups of inventions do not involve common or corresponding special technical features so that the technical relationship between the subject-matter of claims 1-9, 14-19, claims 10 and 11 and claims 12 and 13 required by Rule 13.2 PCT is lacking, and the requirement for unity of invention is not fulfilled.



**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1 Independent claim 1**

- 1.1** The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 1** is not new in the sense of Article 33(2) PCT.  
Document **D1** discloses (the references in parenthesis applying to this document):

An audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "110" and "200"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals; cf. also the ultrasonic transmitters associated with units "400" and "500" in figure 1 and page 6, penultimate paragraph, and figure 2) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1), which at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1) is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (blocks "701" and "702" in figure 2) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. figures 4a, 4c and item "250" in figure 1; page 5, penultimate and last paragraph and page 7, second paragraph) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically (cf. page 20, last paragraph) to detect the presence of at least one person (cf. item "600" in figure 1) from changes in the received ultrasonic signals (cf. page 20, last paragraph whereby echos are identified from locations where no echos were previously detected; cf. also page 8, line 33 - page 9, line 4 and page 9, lines 11-14) and to emit a detection signal (cf. signal "data out" from item "810" in figure 2, figure 3 and page 7, last paragraph).

Therefore, the subject-matter of **claim 1** does not meet the requirements of Art. 33(2)

PCT.

- 1.2 Furthermore, each of the documents **D2** and **D3** discloses all the features of independent **claim 1**.

In detail, document D2 states an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "1" and "2" in figure 1), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "4" and "5" in figure 1), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (receiver "11" in figure 3) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "15" in figure 3 and page 1, lines 102-105 and page 2, lines 3-6) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. page 1, left-hand column, lines 5-13 and page 2, lines 90-95 and lines 102-108) from changes in the received ultrasonic signals (cf. page 2, lines 36-46) and to emit a detection signal (cf. output-signal "15" in figure 3 and page 3, line 112-114).

Document D3 discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "4"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "3" and column 1, lines 31-34), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (cf. item "3") for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "10") for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. items "1" and "2") from changes in the

received ultrasonic signals (cf. column 1, lines 51-58) and to emit a detection signal (cf. output-signal of item "10" in order to adapt the balance and column 1, lines 56-60).

- 2 Dependent **claims 2-9 and 14-19** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step, the reasons being as follows:

**claims 2-4:** the transmission at predetermined intervals and the procedure of comparing the last detected echo pattern with at least one echo pattern detected earlier in order to detect the presence of at least one person is standard practice for the skilled person in the area of ultrasonic measurements, cf. e.g. D1, page 2, last paragraph (transmitting at different times) and page 20, last paragraph; D2, page 2, left-hand column, lines 32-35; page 3, right-hand column, lines 83-85 and claims 5 and 15;

**claims 5-7:** the determination of frequency shifts from an audio signal when a source of sound, observer of sound, or both, move relative to one another is well known to the skilled person; cf. e.g. D4

**claims 8 and 9:** the use of microphones as receiving means and tweeter loudspeaker in order to transmit ultrasonic signals are well known to the skilled person, cf. e.g. D5;

**claims 14-18:** cf. D1, figures 1 and 2 and D2, figure 1 and D3, column 2, lines 4-16 and claims 9-12;

**claim 19:** cf. D1, page 5, third paragraph - last paragraph and claims 1 and 2; D3, column 1, lines 20-50 and claim 1.

3 Art. 6 PCT

- 3.1 The advantage of the invention (the listening room must not be defined by non-reflecting walls and that the listener initially must not identify himself), described on page 2, line 2 - page 3, line 14, with regard to the prior art document D1, are not reflected in the technical features of claim 1.

3.2 The wording

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB2005/050312

"...wherein the ultrasonic signal-processing means are designed automatically to detect the presence..." in claim 1, line 10,  
is ambiguous and attempts to define the invention by the result to be achieved (cf. preliminary examination guidelines, chapter 5, item 5.35).

# PATENT COOPERATION TREATY

REC'D 25 JUL 2005

WIPO

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INTERNATIONAL SEARCHING AUTHORITY

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To:

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
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**FOR FURTHER ACTION**  
See paragraph 2 below

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International Patent Classification (IPC) or both national classification and IPC  
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Applicant  
KONINKLIJKE PHILIPS ELECTRONICS N.V.

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For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

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Authorized Officer

Meiser, J

Telephone No. +49 89 2399-7966



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/050312

---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
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☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
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4. Additional comments:

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**Box No. II Priority**

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1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.
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INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/B2005/050312

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 10-13

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 10-13

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☒ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/B2005/050312

**Box No. IV Lack of unity of invention**

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
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2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
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- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-9,14-19

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-9,14-19
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9,14-19
Industrial applicability (IA)	Yes: Claims	1-9,14-19
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item IV**

**Lack of unity of invention**

- 1 The following documents are referred to in this communication:  
D1: GB-A-2 203 315 (ELIAHU IGAL ZEEVI) 12 October 1988 (1988-10-12)  
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D3: DE 40 27 338 A1 (DRESCHER, RUEDIGER, 7823 BONNDORF, DE;  
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2. This Authority considers that there are 3 inventions covered by the claims indicated  
as follows:

I: Claims 1-9 and 14-19

Claim 1 specifies an audio-video system having an audio reproduction device for reproduction of audio signals via at least one loudspeaker unit, and having ultrasonic signal generating means for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units, which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means for receiving ultrasonic signals, and having ultrasonic signal-processing means for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person from changes in the received ultrasonic signals and to emit a detection signal.

Claim 2 further specifies the audio/video system of claim 1 in that the ultrasonic signal-processing means are designed to detect at predetermined intervals echo pattern and to compare the last detected echo pattern with at least one echo pattern detected earlier in order to detect the presence of at least one person from changes in the echo pattern.

Claims 5-7,8,9,14-18 and 19 address other aspects of the audio-video system whereby the partial international search report already encompasses the subject-matter of these claims.

**II: Claims 10 and 11**

Dependent claim 10 further specifies the audio/video system of claim 1 in that the audio/video system is designed to prepare a user profile by recording user actions.

**III: Claims 12 and 13**

Dependent claim 12 further specifies the audio/video system of claim 1 in that the detection signals are designed to activate an alarm device.

- 3.a** The 3 separate groups of invention are not so linked as to form a single general inventive concept (Rule 13.1 PCT) for the following reasons:  
The closest prior art has been identified as: D1 = GB 2 203 315 (mentioned in the description on page 1).

The common features linking together the inventions 1-3 are the features of independent claim 1.

This subject-matter of claim 1 is already known (cf. documents GB2203315 (**D1**), GB2186367 (**D2**) and DE4027338 (**D3**)).

In detail, document **D1** discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "110" and "200"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals; cf. also the ultrasonic transmitters associated with units "400" and "500" in figure 1 and page 6, penultimate paragraph, and figure 2) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1), which at

least one of the loudspeaker units (cf. page 5, third paragraph and figure 1) is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (blocks "701" and "702" in figure 2) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. figures 4a, 4c and item "250" in figure 1; page 5, penultimate and last paragraph and page 7, second paragraph) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically (cf. page 20, last paragraph) to detect the presence of at least one person (cf. item "600" in figure 1) from changes in the received ultrasonic signals (cf. page 20, last paragraph whereby echos are identified from locations where no echos were previously detected; cf. also page 8, line 33 - page 9, line 4 and page 9, lines 11-14) and to emit a detection signal (cf. signal "data out" from item "810" in figure 2, figure 3 and page 7, last paragraph).

Document **D2** states an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "1" and "2" in figure 1), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "4" and "5" in figure 1), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (receiver "11" in figure 3) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "15" in figure 3 and page 1, lines 102-105 and page 2, lines 3-6) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. page 1, left-hand column, lines 5-13 and page 2, lines 90-95 and lines 102-108) from changes in the received ultrasonic signals (cf. page 2, lines 36-46) and to emit a detection signal (cf. output-signal "15" in figure 3 and page 3, line 112-114).

Document **D3** discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "4"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals,

wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "3" and column 1, lines 31-34), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (cf. item "3") for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "10") for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. items "1" and "2") from changes in the received ultrasonic signals (cf. column 1, lines 51-58) and to emit a detection signal (cf. output-signal of item "10" in order to adapt the balance and column 1, lines 56-60).

- 3.b The 3 groups of inventions mentioned before relate to different aspects of an audio/video system and address different problems, namely:

Claims 1-9 and 14-19:

This invention is based on the problem how to detect the presence of at least one person/listener.

Claims 10 and 11:

This invention is based on the problem how to take the listening profile/preferences of a particular listener/user into account.

Claim 12 and 13:

This invention is based on the problem how to implement safety measures in an audio/video system.

- 3.c Thus, the above 3 groups of inventions do not involve common or corresponding special technical features so that the technical relationship between the subject-matter of claims 1-9, 14-19, claims 10 and 11 and claims 12 and 13 required by Rule 13.2 PCT is lacking, and the requirement for unity of invention is not fulfilled.



Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

1 Independent claim 1

1.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 1** is not new in the sense of Article 33(2) PCT.

Document **D1** discloses (the references in parenthesis applying to this document):

An audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "110" and "200"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals; cf. also the ultrasonic transmitters associated with units "400" and "500" in figure 1 and page 6, penultimate paragraph, and figure 2) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1), which at least one of the loudspeaker units (cf. page 5, third paragraph and figure 1) is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (blocks "701" and "702" in figure 2) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. figures 4a, 4c and item "250" in figure 1; page 5, penultimate and last paragraph and page 7, second paragraph) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically (cf. page 20, last paragraph) to detect the presence of at least one person (cf. item "600" in figure 1) from changes in the received ultrasonic signals (cf. page 20, last paragraph whereby echos are identified from locations where no echos were previously detected; cf. also page 8, line 33 - page 9, line 4 and page 9, lines 11-14) and to emit a detection signal (cf. signal "data out" from item "810" in figure 2, figure 3 and page 7, last paragraph).

Therefore, the subject-matter of **claim 1** does not meet the requirements of Art. 33(2)

PCT.

- 1.2 Furthermore, each of the documents **D2** and **D3** discloses all the features of independent **claim 1**.

In detail, document D2 states an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "1" and "2" in figure 1), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "4" and "5" in figure 1), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (receiver "11" in figure 3) for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "15" in figure 3 and page 1, lines 102-105 and page 2, lines 3-6) for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. page 1, left-hand column, lines 5-13 and page 2, lines 90-95 and lines 102-108) from changes in the received ultrasonic signals (cf. page 2, lines 36-46) and to emit a detection signal (cf. output-signal "15" in figure 3 and page 3, line 112-114).

Document D3 discloses an audio/video system having an audio reproduction device (cf. figure 1) for reproduction of audio signals via at least one loudspeaker unit (loudspeakers "4"), and having ultrasonic signal generating means (implicitly available in order to transmit ultrasonic signals) for generating ultrasonic signals, wherein the ultrasonic signal generating means are designed to emit the ultrasonic signals to at least one of the loudspeaker units (cf. items "3" and column 1, lines 31-34), which at least one of the loudspeaker units is designed to emit the ultrasonic signals, and having ultrasonic signal receiving means (cf. item "3") for receiving ultrasonic signals, and having ultrasonic signal-processing means (cf. item "10") for processing ultrasonic signals received by the ultrasonic signal-receiving means, wherein the ultrasonic signal-processing means are designed automatically to detect the presence of at least one person (cf. items "1" and "2") from changes in the

received ultrasonic signals (cf. column 1, lines 51-58) and to emit a detection signal (cf. output-signal of item "10" in order to adapt the balance and column 1, lines 56-60).

- 2 Dependent **claims 2-9 and 14-19** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step, the reasons being as follows:

**claims 2-4:** the transmission at predetermined intervals and the procedure of comparing the last detected echo pattern with at least one echo pattern detected earlier in order to detect the presence of at least one person is standard practice for the skilled person in the area of ultrasonic measurements, cf. e.g. D1, page 2, last paragraph (transmitting at different times) and page 20, last paragraph; D2, page 2, left-hand column, lines 32-35; page 3, right-hand column, lines 83-85 and claims 5 and 15;

**claims 5-7:** the determination of frequency shifts from an audio signal when a source of sound, observer of sound, or both, move relative to one another is well known to the skilled person; cf. e.g. D4

**claims 8 and 9:** the use of microphones as receiving means and tweeter loudspeaker in order to transmit ultrasonic signals are well known to the skilled person, cf. e.g. D5;

**claims 14-18:** cf. D1, figures 1 and 2 and D2, figure 1 and D3, column 2, lines 4-16 and claims 9-12;

**claim 19:** cf. D1, page 5, third paragraph - last paragraph and claims 1 and 2; D3, column 1, lines 20-50 and claim 1.

3 Art. 6 PCT

- 3.1 The advantage of the invention (the listening room must not be defined by non-reflecting walls and that the listener initially must not identify himself), described on page 2, line 2 - page 3, line 14, with regard to the prior art document D1, are not reflected in the technical features of claim 1.

3.2 The wording

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

**PCT/IB2005/050312**

"...wherein the ultrasonic signal-processing means are designed automatically to detect the presence..." in claim 1, line 10,  
is ambiguous and attempts to define the invention by the result to be achieved (cf. preliminary examination guidelines, chapter 5, item 5.35).